

## **REMARKS**

### *The Amendments*

Claims 1 and 2 have been amended to incorporate features that are set forth in other claims of the application as originally filed. Claim 3 has been amended to specifically recite that the fluorescence collecting sheet is made of quartz glass. This feature is disclosed in Fig. 8 and described in the specification at page 8, lines 16-24, and elsewhere. Claim 4 has been amended to specifically recite that the wavelength shifter sheet is a plastic. This feature is disclosed at page 19, lines 2-6, and elsewhere in the specification.

Claims 5-9 and 16-19 have been amended to more clearly point out and distinctly claim the subject matter Applicant regards as the invention. Claim 8 also has been amended to incorporate the limitations of claims 11 and 14, and claim 9 has been amended to incorporate the limitations of claims 10, 12 and 15. These amendments are supported by the claims as filed. Claims 10-12, 14, and 15 have been cancelled.

Applicant respectfully submits that these amendments add no new matter to the application and earnestly solicit entry thereof.

### *The Office Action*

Claims 1-20 were pending.

The Oath or Declaration has been identified as defective because the oath does not identify *this* application by United States Application Serial Number and filing date. Further, the declaration is said not to contain sufficient address information, such as the city and postal code of the inventor.

Claims 5-8, 11, 14, 15, 17, 18, and 20 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claims the

subject matter applicant regards as the invention. The Examiner identifies certain indefinite articles and phrases under this rejection. Also, claims 8 and 20 are said to recite both apparatus and process elements simultaneously.

Independent claims 8 and 20, and claims 11, 14, and 17 depending therefrom, stand rejected under 35 U.S.C. § 101 because claims 8 and 20 are said to recite both apparatus and method elements.

Claims 9, 10, and 20 stand rejected under 35 U.S.C. § 102(b) as anticipated by Katagiri, JP 2000/187077, Figs. 7 and 3, respectively.

Claims 1-7 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Schreiner, US 6,563,121, in view of Sealock, US 5,783,829, and DiFilippo, US 6,078,052. Schreiner is said to disclose grooves cut to a depth of at least one half of the thickness of the top of a scintillator sheet and a fluorescence reflector buried in the grooves. Sealock is said to disclose advantages for use of optical fibers in top-surface grooves. DiFilippo is said to disclose optical light guides and wavelength shifter sheets with radiation detection media.

Claims 8 and 14 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Madono, US 6,066,851, in view of Katagiri. Madono is said to disclose a liquid scintillator with a white plastic block that acts as a reflector block. It is admitted that the block is not placed in a detection vessel capable of sealing off the liquid scintillator. Katagiri is cited for its disclosure of optical fiber bundles. It is said to have been obvious to include a neutron detector in the device of Madono or of Katagiri in view of the increased utility of such a device.

Claims 11 and 17 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Madono and Katagiri, and further in view of Koshishiba, JP 3-29256. Neither Madono nor

Katagiri disclose a circulation mechanism for liquid scintillator material. Koshishiba is said to disclose that liquid scintillator that is kept new by a circulating mechanism improves speed, life, and gain. It is said to have been obvious to include a neutron converter element.

Claims 12, 13, 15, 16, 18, and 19 stand rejected over Katagiri in view of Koshishiba. Again, the circulation system is said to be made obvious by Koshishiba's teaching regarding liquid scintillator. Inclusion of neutron conversion also is said to have been obvious.

*Remarks*

Claims 1-9, 13, and 16-20 are pending. Claims 10-12, 14, and 15 have been cancelled.

Applicant respectfully submits that the declaration for this continuing application is not defective for any of the reasons cited by the Examiner. The declaration is a photocopy of the declaration filed in the parent application, United States Application Serial Number 09/940,449, and would not be expected to identify this continuing application. Further, the address is complete, in accordance with Japanese practices, on both the declaration and the Application Data Sheet. Ibaraki-ken indicates the prefecture of Ibaraki, and Naka-gun means Naka county. Tokai-mura designates the village of Tokai. Therefore, Applicant respectfully submits that the declaration is complete, and is not defective.

Some of the claims rejected as indefinite (11, 14, and 15) have been cancelled. Applicant respectfully traverses the rejection of the remaining claims. The remaining claims have been amended to more particularly point out and distinctly claim the subject matter applicant regards as the invention. Claims 5-7 have been amended to eliminate sheet descriptors for which there is no antecedent basis in the claim from which each claim depends. Claims 8 (and 17 depending therefrom), 18, and 20 have been amended to more

clearly point out and distinctly claim the subject matter, in part by eliminating informalities in claim style. Applicant respectfully submits that there is sufficient antecedent basis in claim 8 for the phrase 'radiation detecting medium' in claim 17.

Applicant respectfully traverses the rejection of pending claims 8, 17, and 20 under 35 U.S.C. § 101. Claim 8 has been re-written to ensure that only apparatus features are claimed. Claim 17 depends from claim 8, and claim 20 now depends from a number of claims. Both claims 17 and 20 have been amended.

Applicant respectfully traverses the rejection of claims 9 and 20 (claim 10 having been cancelled) as anticipated by Katagiri. Claim 9 is directed to a detector wherein a radiation detecting medium that generates fluorescence when irradiated is placed in the upper, lower, or both parts of a detection vessel capable of holding liquid scintillator, and the fluorescence is detected with optical fiber bundles. The detector also has a circulating system for liquid scintillator, and the liquid scintillator is mixed with a neutron converter element. Applicant respectfully submits that Katagiri does not disclose these features. Claim 20 now has been amended to include the elements of other claims, thus obviating this anticipation rejection over Katagiri.

Claims 1-7 stand rejected over Schreiner in view of Sealock and DiFilippo. Applicant respectfully traverses this rejection. In claim 1 as amended, a scintillator sheet has grooves cut to a depth of at least one half of the thickness of the sheet. The scintillator contains a neutron converter selected from the group consisting of  $^6\text{Li}$ ,  $^{10}\text{B}$ , Gd, and blends thereof, and a material having an atomic number of at least 40 is used as the reflector. Claim 2 includes the same limitations. Further, the assertion that it would have been obvious to substitute optical fibers of Sealock for the reflectors of Schreiner is not well founded. There is no

suggestion in either patent, or in the literature, to make the proposed combination. Thus, Applicant respectfully traverses this rejection with regard to claims 1, 2, and 5/2, and respectfully submits that these claims are in condition of allowance.

With regard to claims 3 and 6/3 and 4 and 7/4, Applicant respectfully traverses the rejection. The rejection is based on the premise that one is free to ignore the teachings of the cited documents. However, none of the cited documents suggest or disclose the claimed invention. Therefore, it could not have been obvious to make the suggested combination. Further, there is no teaching regarding what aspects of the secondary references should be adopted. None of these patents suggest or disclose that it would be useful to modify the detectors of the cited patents, or how to modify them. Applicant respectfully traverses this rejection.

Applicant respectfully traverses the rejection of claim 8 (14 has been cancelled) over Madono in view of Katagiri. Claim 8 as amended includes elements directed to a detection vessel filled with liquid scintillator and containing a reflector block, and circulation of the liquid scintillator. Madono is directed to a reflector block filled with liquid scintillator, and does not circulate this liquid. Indeed, the Examiner admits that Madono is not directed to the claimed invention. Further, there is no suggestion in Madono that Katagiri's neutron detector would be suitable for the system claimed herein. Therefore, Applicant respectfully traverses this rejection.

Similarly, Applicant respectfully traverses the rejection of claim 17 (claim 11 having been cancelled) over Madono, Katagiri, and Koshishiba. This rejection fails here for the same reason the rejection of claim 8 over Madono and Katagiri fails. Koshishiba adds nothing relevant to the teachings of Madono and Katagiri regarding these features. Further, it

is noted that neither Madono nor Katagiri, each of which is dated well after the disclosure of Koshishiba, make any mention of circulation. This is because Madono's system does not admit of circulation, and Katagiri adds nothing to this teaching. Therefore, Applicant respectfully submits that claim 17 is in condition for allowance.

Applicant respectfully repeats this argument in traverse of the rejection of claims 13, 16, 18, and 19 over Katagiri in view of Koshishiba. The remaining claims have been cancelled.

**CONCLUSION**

The declaration and Application Data Sheet properly identify the application and the inventor's address.

Further, the claims have been amended to more clearly point out and distinctly claim the subject matter applicant regards as the invention. The claims, as amended, are in condition for allowance in view of the art cited. The cited patents neither suggest nor disclose, whether considered alone or in combination, the claimed invention. Applicant respectfully submits that the claims are in condition for allowance, and earnestly solicits favorable action thereon.

Respectfully submitted,

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